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## Patent Abstracts of Japan

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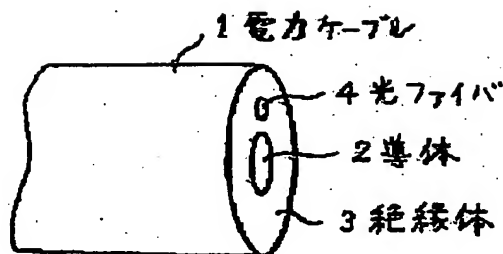
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APPLICANT : TOSHIBA CORP;

INVENTOR : NAKAMURA TORU;

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TITLE : POWER CABLE DEVICE CONTAINING  
OPTICAL FIBER



ABSTRACT : PROBLEM TO BE SOLVED: To enable a temperature rise to be detected precisely and speedily, and thereby to improve power cable reliability by laying an optical fiber in a power cable.

SOLUTION: A power cable 1 is coated with an insulator 3 on the outer circumference of a linear conductor 2, serves as an electric wire for sending and receiving power through the conductor 2, and an optical fiber 4 is embedded for the insulator to send optical signals. By temperature change of the insulator 3, the scattering state of optical signals connected to the optical fiber 4 is changed. That is, since the thermal vibration state of a glass molecule depends on the temperature of the insulator 3, the optical signals of the pulse light incident to the optical fiber 4 are scattering light with a certain light temperature distribution. And, of these Raman scattering lights, stoke light and anti-stoke light which are shifted according to a longer or shorter wavelength are detected by means of a light temperature distribution radar device and calculated, and whereby the temperature rise of the insulator 3 can be detected.

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